

But on this occasion, the female was sitting on the underside of the leaf and the two males were fluttering around her. On a closer look I realised that the female was dead and a crab spider was clutching her firmly in its legs. These anxious males were probably trying to mate with a dead female. But as she was on the underside of the leaf, they were not able to land on her. Finally they gave up and flew away. A few more males also came later and exhibited similar behaviour.

When I twisted the twig to get a photograph, a male landed on the female and started rubbing his proboscis on her thorax. He was trying to suck something. The spider was trying to push him off the female's body. I could easily document this moment on film. The photograph clearly shows the male sitting on the spider and the dead female, and apparently sucking something from her thorax. The spider also can be

seen pushing the male. After a few seconds the male flew away.

The males were probably attracted towards the female and were unable to differentiate between a dead and a live female. The last male, which actually landed on the female's body probably also did not notice the well camouflaged spider. The more surprising facts, however, were that the spider that had just killed a female, did not attempt to kill the male and that the male also was not deterred even after the spider started pushing it off. Finally what was the male sucking from the female's body?

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29. PREVENTION OF RHINOCEROS BEETLE (*ORYCTES RHINOCEROS*) IN COCONUT PALM USING RED ANTS

Rhinoceros beetle (*Oryctes rhinoceros*) has been one of the most important and major pests of coconut palms in almost all coconut growing regions of the World. The adult beetle is stout with dark dorsal surface and reddish - brown ventral surface. It is 35.50 mm in length and 14 - 21 mm in width, and has a slightly tapering horn on its head. The female beetle lays eggs singly in any decaying organic matter in the field. The eggs hatch in 8-14 days and produce larvae. After completing larval and pupation stages adult beetles emerge from the organic matter and then cause severe damages to coconut palms. Besides, it also damages palmyra palm (*Borassus flabellifer*), toddy Palm (*Phoenix sylvestris*), oil palms (*Elaeis quianensis*), aloe, sugarcane, pineapple and screw-pine (Seshagiri Rao 1972). BHC, Oil cakes and Chlordane dust are used for controlling the beetles.

Red ants (*Oecophylla smaragdina* Fb.) has been known for their pest control activity. In Arabia

caterpillars and large boring beetles were destroyed in date palms using the red ants in 1775 (Debach 1974). Coconut moth (*Levuana irridenscens*) in Fiji was killed using the red ants (Tothill *et al.* 1930). Citrus shield bugs (*Rhynchocoris* sp.) in citrus farms in China have been killed using the red ants (Hill 1983). This pest eating property is used to prevent rhinoceros beetle in coconut palms.

25 young (5-9 years old) coconut palms severely attacked by rhinoceros beetle were selected in seven plantations in different parts of Kanyakumari District, Tamil Nadu. Red ants were collected along with their nests from *Thespesia populnea* tree and introduced into the crown of the affected coconut palms. Killed insects were added into the crown to feed the ants. After a month the pest damage was tested in the palms. All the test palms were cured by the ants. The young leaves were quite normal and did not have symptoms of the beetle attack. 25 adult beetles were collected from compost pit and introduced into the crown of

palms in which the ants were living. This was done by tying one of the legs of each beetle with a thread. Even if the beetles were introduced into the crown, they tried to fly away from the crown, and did not produce any symptom of the beetle attack. When this was done in antless, five years old, coconut palms 7 beetles escaped from the crown and the remaining 18 beetles made holes in the stalks of young leaves. Thereafter the affected palms were cured by introducing red ants.

Even though rhinoceros beetles have hard skin, red ants tried to catch and eat them when the beetles were introduced into the crown of palms with red ants. The vicious bites and injection of formic acid at sensitive parts of the beetles might be the reason for

the control of beetles in ant introduced trees. But red ants have been considered as minor pests for coconut for many years because they cause some difficulties in harvesting (Hill 1983). However they increased yield in coconut palms (Kumaresan 1994).

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REFERENCES

- DEBACH, PAUL (1974): Biological Control of Natural Enemies. Cambridge University Press.
- HILL, DENNIS S. (1983): Agricultural pests of Tropics and their control. Cambridge University Press.
- KUMARESAN, V. (1994): Myremecophily: A harmful association on *Areca catechu*. L.J. Swamy Bot. Club. Vol-II. pp. 59.
- SESHAGIRI RAO, D. (1972): A HandBook of Plant Protection. S.V. Rangawamy and Co. Pvt. Ltd., Bangalore.
- TOTHILL, J.D., T.H.C. TAYLOR & P.W. PAINE (1930): The coconut moth in Fiji: A history of its control by means of parasites. Publ. Imp. Bur. Entomol. (Now the Commonwealth Institute of Entomology), London, pp. 269.

30. NEW DISTRIBUTIONAL RECORD OF *TRICHOTRIA TETRACTIS* (ROTATORIA/TRICHOTRIDAE) AND *DAPHNIA LUMHOLTZI* (BRANCHIOPODA/CLADOCERA/DAPHNIDAE) FROM KOLLERU LAKE, ANDHRA PRADESH WITH NOTES ON INDICATOR VALUE

Ecological studies on Kolleru lake (lat. 16° 32' and 16° 47' N, long. 81° 21' and 81° 51' E), Krishna and West Godavari Districts, Andhra Pradesh have been in progress by the junior author. The rotifer plankter, *Trichotria tetractis* occurred in samples from Kolleti Kota in the eastern flank of the lake, Krishna District, while *Daphnia lumholtzi* was observed in samples from Kovvadi Lanka, in the western flank, West Godavari District.

Despite general status reports (Radhakrishna 1988, Seshavatharam and Dutt 1978, and Rama Murthy 1982) comprehensive systematic studies on the zooplankton component from around the region are few and far between (Reddy 1977, Durga Prasad 1981 and Durga Prasad and Padmavathi 1991).

Trichotria tetractis (Ehrenberg, 1832)

Remarks: Rather uncommon in distribution, it has not been reported/recorded as frequently as other rotifer species. The only earlier reports of this rotifer from Indian plankter are by Arora 1966 (Nagpur), Wulfret 1966 (Baroda), Nayar and Nair 1969 (Kerala) and Dhanapathi 1974 (Bhimavaram, West Godavari Dist., A.P.). Elsewhere, Daems and Dumont (1974) recorded *T. tetractis* from Nepal. Apparently, the rotifer, *Trichotria tetractis* is rare in occurrence and was observed only in samples, from Kolleti kota in the eastern zone. Indian studies recording *Trichotria tetractis* as indicator of water quality are therefore not known. Kuezyński (1987) rates the species as occurring in low II or